

CLAIMS:

[c01] 1/ A flame retardant resinous composition comprising

- (i) at least one aromatic polycarbonate,
- (ii) at least one silicone source,
- (iii) at least one boron source, and
- (iv) optionally at least one member selected from the group consisting of an antidrip agent, a second thermoplastic resin which is not a polycarbonate resin, and a rubber modified graft copolymer.

[c02] 2. The composition of claim 1 wherein the aromatic polycarbonate comprises structural units derived from at least one dihydric phenol selected from the group consisting of 6-hydroxy-1-(4'-hydroxyphenyl)-1,3,3-trimethylindane, 4,4'-(3,3,5-trimethylcyclohexylidene)diphenol; 1,1-bis(4-hydroxy-3-methylphenyl)cyclohexane; 2,2-bis(4-hydroxyphenyl)propane; 4,4-bis(4-hydroxyphenyl)heptane; 2,2-bis(4-hydroxy-3,5-dimethylphenyl)propane; 2,2-bis(4-hydroxy-3-methylphenyl)propane; 2,2-bis(4-hydroxy-3-ethylphenyl)propane; 2,2-bis(4-hydroxy-3-isopropylphenyl)propane; 2,4'-dihydroxydiphenylmethane; bis(2-hydroxyphenyl)methane; bis(4-hydroxyphenyl)methane; bis(4-hydroxy-5-nitrophenyl)methane; bis(4-hydroxy-2,6-dimethyl-3-methoxyphenyl)methane; 1,1-bis(4-hydroxyphenyl)ethane; 1,1-bis(4-hydroxy-2-chlorophenyl)ethane; 2,2-bis(3-phenyl-4-hydroxyphenyl)-propane; bis(4-hydroxyphenyl)cyclohexylmethane; 2,2-bis(4-hydroxyphenyl)-1-phenylpropane; 3,5,3',5'-tetrachloro-4,4'-dihydroxyphenyl)propane; 2,4'-dihydroxyphenyl sulfone; 2,6-dihydroxy naphthalene; 6,6'-dihydroxy-3,3,3',3'-tetramethyl-1,1'-spirobiindane; hydroquinone, resorcinol; C₁₋₃ alkyl-substituted resorcinols; 3-(4-hydroxyphenyl)-1,1,3-trimethylindan-5-ol, and 1-(4-hydroxyphenyl)-1,3,3-trimethylindan-5-ol.

[c03] 3. The composition of claim 2 wherein the dihydric phenol comprises bisphenol A.

[c04] 4. The composition of claim 1 wherein the silicone source comprises at least one member selected from the group consisting of a copolymer comprising siloxane structural units in combination with structural units from a second, non-silicon-containing polymer; a hydroxy-terminated poly(diorganosiloxane); and a non-polymeric molecule with molecular weight less than about 500 comprising at least one silicon atom, at least one aromatic moiety, and at least one hydroxy group.

[c05] 5. The composition of claim 4 wherein the silicone source comprises a copolymer with structural units of polydimethylsiloxane in combination with structural units of bisphenol A polycarbonate.

[c06] 6. The composition of claim 4 wherein the silicone source is a hydroxy-terminated polymer comprising poly(dimethylsiloxane) structural units.

[c07] 7. The composition of claim 4 wherein the silicone source is present in an amount in a range of between about 0.1 wt % and about 10 wt %, based on the weight of the entire composition.

[c08] 8. The composition of claim 1 wherein the boron source is at least one member selected from the group consisting of boric acid, boron oxide, and boron phosphate.

[c09] 9. The composition of claim 8 wherein the boron source is present in an amount in a range of between about 0.1 wt % and about 10 wt %, based on the weight of the entire composition.

[c10] 10. The composition of claim 1 further comprising at least one antidrip agent.

[c11] 11. The composition of claim 10 wherein the antidrip agent comprises at least one fluoropolymer.

10015049.11201

[c12] 12. The composition of claim 11 wherein the fluoropolymer is present in an amount in a range of between about 0.01 wt % and about 2 wt %, based on the weight of the entire composition.

[c13] 13. The composition of claim 11 wherein the fluoropolymer comprises polytetrafluoroethylene.

[c14] 14. The composition of claim 11 wherein the fluoropolymer is added to the composition in the form of a concentrate in at least one other resinous component of the composition.

[c15] 15. The composition of claim 1 further comprising at least one of a second thermoplastic resin, which is not a polycarbonate resin and which exhibits a T_g of greater than about 25°C.

[c16] 16. The composition of claim 15 wherein the second thermoplastic resin comprises structural units derived from one or more monomers selected from the group consisting of vinyl aromatic monomers, monoethylenically unsaturated nitrile monomers, and C_1 - C_{12} alkyl (meth)acrylate monomers.

[c17] 17. The composition of claim 16 wherein the second thermoplastic resin comprises structural units derived from styrene and acrylonitrile.

[c18] 18. The composition of claim 15 wherein the second thermoplastic resin is present in an amount in a range of between about 0.1 wt % and about 35 wt %, based on the weight of the entire composition.

[c19] 19. The composition of claim 1 further comprising at least one rubber modified graft copolymer comprising a discontinuous rubber phase dispersed in a continuous rigid thermoplastic phase, wherein at least a portion of the rigid thermoplastic phase is chemically grafted to the rubber phase.

[c20] 20. The composition of claim 19 wherein the rubber phase has a glass transition temperature of less than or equal to 25°C.

[c21] 21. The composition of claim 20 wherein the rubber comprises structural units derived from at least one of 1,3-butadiene, isoprene, or butyl acrylate.

[c22] 22. The composition of claim 19 wherein the rigid thermoplastic resin has a glass transition temperature of greater than about 25°C, and from about 10 to about 90 wt % of the rigid thermoplastic phase is chemically grafted to the rubber phase.

[c23] 23. The composition of claim 19 wherein the rubber phase comprises a polybutadiene rubber, poly(styrene-butadiene) rubber, poly(butyl acrylate) rubber, or ethylene-propylene-diene modified rubber, and the rigid thermoplastic phase comprises a styrene-acrylonitrile copolymer.

[c24] 24. The composition of claim 19 wherein the rubber modified graft copolymer is present in an amount in a range of between about 0.1 wt % and about 35 wt %, based on the weight of the entire composition.

[c25] 25. The composition of claim 1 further comprising at least one of a second thermoplastic resin and at least one rubber modified graft copolymer,

wherein the second thermoplastic resin exhibits a T_g of greater than about 25°C and is not a polycarbonate resin; and

wherein the rubber modified graft copolymer comprises a discontinuous rubber phase dispersed in a continuous rigid thermoplastic phase, wherein at least a portion of the rigid thermoplastic phase is chemically grafted to the rubber phase.

[c26] 26. The composition of claim 25 wherein the second thermoplastic resin comprises structural units derived from styrene and acrylonitrile; and the rubber modified graft copolymer rubber phase comprises a polybutadiene or poly(styrene-butadiene) rubber and the rigid thermoplastic phase comprises a styrene-acrylonitrile copolymer.

[c27] 27. The composition of claim 1 further comprising at least one polyfunctional alcohol comprising at least two hydroxy groups.

[c28] 28. The composition of claim 27 wherein the polyfunctional alcohol is selected from the group consisting of mannitol, sorbitol, fructose, glucose, pentaerythritol, cyclodextrin, sucrose, galactose, maltose, ribose, and xylitol.

[c29] 29. The composition of claim 27 wherein the polyfunctional alcohol is present in an amount in a range of between about 0.1 wt % and about 10 wt %, based on the weight of the entire composition.

[c30] 30. The composition of claim 1 further comprising at least one polymeric or non-polymeric organic phosphorus species selected from the group consisting of phosphate esters, thiophosphate esters, phosphonate esters, thiophosphonate esters, phosphinate esters, thiophosphinate esters, phosphines, triphenylphosphine, phosphine oxides, triphenylphosphine oxide, tris(2-cyanoethyl)phosphine oxide, thiophosphine oxides, and phosphonium salts.

[c31] 31. The composition of claim 30 wherein the phosphorus species is an aromatic phosphate.

[c32] 32. The composition of claim 31 wherein the aromatic phosphate is selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c33] 33. The composition of claim 30 wherein the phosphorus species is present in an amount in a range of between about 0.5 wt % and about 15 wt %, based on the weight of the entire composition.

[c34] 34. A flame retardant resinous composition comprising:

(v) a bisphenol A polycarbonate present in an amount in a range of between about 88 wt % and about 98 wt %;

(vi) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a

copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(vii) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate;

wherein all amounts are based on the weight of the entire composition.

[c35] 35. The composition of claim 34 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c36] 36. A flame retardant resinous composition comprising:

(viii) a bisphenol A polycarbonate present in an amount in a range of between about 65 wt % and about 84 wt %;

(ix) a styrene-acrylonitrile copolymer present in an amount in a range of between about 10 wt % and about 18 wt %;

(x) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(xi) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate;

wherein all amounts are based on the weight of the entire composition.

[c37] 37. The composition of claim 36 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c38] 38. The composition of claim 36 further comprising at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c39] 39. The composition of claim 36 further comprising

(a) polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition; and

(b) at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c40] 40. A flame retardant resinous composition comprising:

(xii) a bisphenol A polycarbonate present in an amount in a range of between about 65 wt % and about 84 wt %;

(xiii) a rubber modified graft copolymer present in an amount in a range of between about 2 wt % and about 14 wt %, and comprising a polybutadiene or poly(styrene-butadiene) rubber, and a styrene-acrylonitrile copolymer;

(xiv) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(xv) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate;

wherein all amounts are based on the weight of the entire composition.

[c41] 41. The composition of claim 40 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c42] 42. The composition of claim 40 further comprising at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c43] 43. The composition of claim 40 further comprising at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire composition, and selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c44] 44. The composition of claim 40 further comprising both of at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol; and

at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire composition, and selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c45] 45. A flame retardant resinous composition comprising:

10015049-11201
FOUO

(xvi) a bisphenol A polycarbonate present in an amount in a range of between about 65 wt % and about 84 wt %;

(xvii) a styrene-acrylonitrile copolymer present in an amount in a range of between about 10 wt % and about 18 wt %;

(xviii) a rubber modified graft copolymer present in an amount in a range of between about 2 wt % and about 14 wt %, and comprising a polybutadiene or poly(styrene-butadiene) rubber, and a styrene-acrylonitrile copolymer;

(xix) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(xx) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate;

wherein all amounts are based on the weight of the entire composition.

[c46] 46. The composition of claim 45 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c47] 47. The composition of claim 45 further comprising at least one polyfunctional alcohol in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c48] 48. The composition of claim 45 further comprising at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire composition, and selected from the

group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c49] 49. The composition of claim 45 further comprising both of at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol; and

at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire composition, and selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c50] 50. A method for making a flame retardant resinous composition comprising:

(i) at least one aromatic polycarbonate,

(ii) at least one silicone source,

(iii) at least one boron source, and

(iv) optionally at least one member selected from the group consisting of an antidrip agent, a second thermoplastic resin which is not a polycarbonate resin, and a rubber modified graft copolymer;

which comprises combining and mixing the components of the composition under conditions suitable for the formation of a blend of the components, and, optionally, then reducing the composition so formed to particulate form.

[c51] 51. The method of claim 50 wherein the aromatic polycarbonate comprises structural units derived from at least one dihydric phenol selected from the group consisting of 6-hydroxy-1-(4'-hydroxyphenyl)-1,3,3-trimethylindane, 4,4'-(3,3,5-trimethylcyclohexylidene)diphenol; 1,1-bis(4-hydroxy-3-methylphenyl)cyclohexane; 2,2-bis(4-hydroxyphenyl)propane; 4,4-bis(4-

hydroxyphenyl)heptane; 2,2-bis(4-hydroxy-3,5-dimethylphenyl)propane; 2,2-bis(4-hydroxy-3-methylphenyl)propane; 2,2-bis(4-hydroxy-3-ethylphenyl)propane; 2,2-bis(4-hydroxy-3-isopropylphenyl)propane; 2,4'-dihydroxydiphenylmethane; bis(2-hydroxyphenyl)methane; bis(4-hydroxy-phenyl)methane; bis(4-hydroxy-5-nitrophenyl)methane; bis(4-hydroxy-2,6-dimethyl-3-methoxyphenyl)methane; 1,1-bis(4-hydroxyphenyl)ethane; 1,1-bis(4-hydroxy-2-chlorophenyl)ethane; 2,2-bis(3-phenyl-4-hydroxyphenyl)-propane; bis(4-hydroxyphenyl)cyclohexylmethane; 2,2-bis(4-hydroxyphenyl)-1-phenylpropane; 3,5,3',5'-tetrachloro-4,4'-dihydroxyphenyl)propane; 2,4'-dihydroxyphenyl sulfone; 2,6-dihydroxy naphthalene; 6,6'-dihydroxy-3,3,3',3'-tetramethyl-1,1'-spirobiindane; hydroquinone, resorcinol; C₁₋₃ alkyl-substituted resorcinols; 3-(4-hydroxyphenyl)-1,1,3-trimethylindan-5-ol, and 1-(4-hydroxyphenyl)-1,3,3-trimethylindan-5-ol.

[c52] 52. The method of claim 51 wherein the dihydric phenol comprises bisphenol A.

[c53] 53. The method of claim 50 wherein the silicone source comprises at least one member selected from the group consisting of a copolymer comprising siloxane structural units in combination with structural units from a second, non-silicon-containing polymer; a hydroxy-terminated poly(diorganosiloxane); and a non-polymeric molecule with molecular weight less than about 500 comprising at least one silicon atom, at least one aromatic moiety, and at least one hydroxy group.

[c54] 54. The method of claim 53 wherein the silicone source comprises a copolymer with structural units of polydimethylsiloxane in combination with structural units of bisphenol A polycarbonate.

[c55] 55. The method of claim 53 wherein the silicone source is a hydroxy-terminated polymer comprising poly(dimethylsiloxane) structural units.

[c56] 56. The method of claim 53 wherein the silicone source is present in an amount in a range of between about 0.1 wt % and about 10 wt %, based on the weight of the entire composition.

[c57] 57. The method of claim 50 wherein the boron source is at least one member selected from the group consisting of boric acid, boron oxide, and boron phosphate.

[c58] 58. The method of claim 57 wherein the boron source is present in an amount in a range of between about 0.1 wt % and about 10 wt %, based on the weight of the entire composition.

[c59] 59. The method of claim 50 further comprising at least one antidrip agent.

[c60] 60. The method of claim 59 wherein the antidrip agent comprises at least one fluoropolymer.

[c61] 61. The method of claim 60 wherein the fluoropolymer is present in an amount in a range of between about 0.01 wt % and about 2 wt %, based on the weight of the entire composition.

[c62] 62. The method of claim 58 wherein the fluoropolymer comprises polytetrafluoroethylene.

[c63] 63. The method of claim 58 wherein the fluoropolymer is added to the composition in the form of a concentrate in at least one other resinous component of the composition.

[c64] 64. The method of claim 50 further comprising at least one of a second thermoplastic resin, which is not a polycarbonate resin and which exhibits a T_g of greater than about 25°C.

[c65] 65. The method of claim 64 wherein the second thermoplastic resin comprises structural units derived from one or more monomers selected from the group consisting of vinyl aromatic monomers, monoethylenically unsaturated nitrile monomers, and C₁-C₁₂ alkyl (meth)acrylate monomers.

[c66] 66. The method of claim 65 wherein the second thermoplastic resin comprises structural units derived from styrene and acrylonitrile.

[c67] 67. The method of claim 64 wherein the second thermoplastic resin is present in an amount in a range of between about 0.1 wt % and about 35 wt %, based on the weight of the entire composition.

[c68] 68. The method of claim 50 further comprising at least one rubber modified graft copolymer comprising a discontinuous rubber phase dispersed in a continuous rigid thermoplastic phase, wherein at least a portion of the rigid thermoplastic phase is chemically grafted to the rubber phase.

[c69] 69. The method of claim 68 wherein the rubber phase has a glass transition temperature of less than or equal to 25°C.

[c70] 70. The method of claim 69 wherein the rubber comprises structural units derived from at least one of 1,3-butadiene, isoprene, or butyl acrylate.

[c71] 71. The method of claim 68 wherein the rigid thermoplastic resin has a glass transition temperature of greater than about 25°C, and from about 10 to about 90 wt % of the rigid thermoplastic phase is chemically grafted to the rubber phase.

[c72] 72. The method of claim 68 wherein the rubber phase comprises a polybutadiene rubber, poly(styrene-butadiene) rubber, poly(butyl acrylate) rubber, or ethylene-propylene-diene modified rubber, and the rigid thermoplastic phase comprises a styrene-acrylonitrile copolymer.

[c73] 73. The method of claim 68 wherein the rubber modified graft copolymer is present in an amount in a range of between about 0.1 wt % and about 35 wt %, based on the weight of the entire composition.

[c74] 74. The method of claim 50 further comprising at least one of a second thermoplastic resin and at least one rubber modified graft copolymer,

wherein the second thermoplastic resin exhibits a T_g of greater than about 25°C and is not a polycarbonate resin; and

wherein the rubber modified graft copolymer comprises a discontinuous rubber phase dispersed in a continuous rigid thermoplastic phase, wherein at least a portion of the rigid thermoplastic phase is chemically grafted to the rubber phase.

[c75] 75. The method of claim 74 wherein the second thermoplastic resin comprises structural units derived from styrene and acrylonitrile; and the rubber modified graft copolymer rubber phase comprises a polybutadiene or poly(styrene-butadiene) rubber and the rigid thermoplastic phase comprises a styrene-acrylonitrile copolymer.

[c76] 76. The method of claim 50 further comprising at least one polyfunctional alcohol comprising at least two hydroxy groups.

[c77] 77. The method of claim 76 wherein the polyfunctional alcohol is selected from the group consisting of mannitol, sorbitol, fructose, glucose, pentaerythritol, cyclodextrin, sucrose, galactose, maltose, ribose, and xylitol.

[c78] 78. The method of claim 76 wherein the polyfunctional alcohol is present in an amount in a range of between about 0.1 wt % and about 10 wt %, based on the weight of the entire composition.

[c79] 79. The method of claim 50 further comprising at least one polymeric or non-polymeric organic phosphorus species selected from the group consisting of phosphate esters, thiophosphate esters, phosphonate esters, thiophosphonate esters, phosphinate esters, thiophosphinate esters, phosphines, triphenylphosphine, phosphine oxides, triphenylphosphine oxide, tris(2-cyanoethyl)phosphine oxide, thiophosphine oxides, and phosphonium salts.

[c80] 80. The method of claim 79 wherein the phosphorus species is an aromatic phosphate.

[c81] 81. The method of claim 80 wherein the aromatic phosphate is selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c82] 82. The method of claim 79 wherein the phosphorus species is present in an amount in a range of between about 0.5 wt % and about 15 wt %, based on the weight of the entire composition.

[c83] 83. A method for making a flame retardant resinous composition comprising:

(v) a bisphenol A polycarbonate present in an amount in a range of between about 88 wt % and about 98 wt %;

(vi) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(vii) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate, wherein all amounts are based on the weight of the entire composition;

which comprises combining and mixing the components of the composition under conditions suitable for the formation of a blend of the components, and, optionally, then reducing the composition so formed to particulate form.

[c84] 84. The method of claim 83 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c85] 85. A method for making a flame retardant resinous composition comprising

(viii) a bisphenol A polycarbonate present in an amount in a range of between about 65 wt % and about 84 wt %;

(ix) a styrene-acrylonitrile copolymer present in an amount in a range of between about 10 wt % and about 18 wt %;

(x) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(xi) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate, wherein all amounts are based on the weight of the entire composition;

which comprises combining and mixing the components of the composition under conditions suitable for the formation of a blend of the components, and, optionally, then reducing the composition so formed to particulate form.

[c86] 86. The method of claim 85 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c87] 87. The method of claim 85 further comprising at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c88] 88. The method of claim 85 further comprising

(a) polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition; and

(b) at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire

composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c89] ~~89.~~ A method for making a flame retardant resinous composition comprising:

(xii) a bisphenol A polycarbonate present in an amount in a range of between about 65 wt % and about 84 wt %;

(xiii) a rubber modified graft copolymer present in an amount in a range of between about 2 wt % and about 14 wt %, and comprising a polybutadiene or poly(styrene-butadiene) rubber, and a styrene-acrylonitrile copolymer;

(xiv) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(xv) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate, wherein all amounts are based on the weight of the entire composition;

which comprises combining and mixing the components of the composition under conditions suitable for the formation of a blend of the components, and, optionally, then reducing the composition so formed to particulate form.

[c90] 90. The method of claim 89 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c91] 91. The method of claim 89 further comprising at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and

about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c92] 92. The method of claim 89 further comprising at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire composition, and selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c93] 93. The method of claim 89 further comprising both of at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol; and

at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire composition, and selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c94] 94. A method for making a flame retardant resinous composition comprising:

(xvi) a bisphenol A polycarbonate present in an amount in a range of between about 65 wt % and about 84 wt %;

(xvii) a styrene-acrylonitrile copolymer present in an amount in a range of between about 10 wt % and about 18 wt %;

(xviii) a rubber modified graft copolymer present in an amount in a range of between about 2 wt % and about 14 wt %, and comprising a polybutadiene or poly(styrene-butadiene) rubber, and a styrene-acrylonitrile copolymer;

(xix) at least one silicone source present in an amount in a range of between about 0.4 wt % and about 3 wt %; and selected from the group consisting of a

copolymer comprising polydimethylsiloxane structural units in combination with bisphenol A polycarbonate structural units; and a hydroxy-terminated poly(dimethylsiloxane); and

(xx) at least one boron source present in an amount in a range of between about 0.2 wt % and about 2 wt %; and selected from the group consisting of boric acid, boron oxide, and boron phosphate, wherein all amounts are based on the weight of the entire composition;

which comprises combining and mixing the components of the composition under conditions suitable for the formation of a blend of the components, and, optionally, then reducing the composition so formed to particulate form.

[c95] 95. The method of claim 94 further comprising polytetrafluoroethylene present in an amount in a range of between about 0.1 wt % and about 1 wt %, based on the weight of the entire composition.

[c96] 96. The method of claim 94 further comprising at least one polyfunctional alcohol in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol.

[c97] 97. The method of claim 94 further comprising at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire composition, and selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

[c98] 98. The method of claim 94 further comprising both of at least one polyfunctional alcohol present in an amount in a range of between about 0.5 wt % and about 3.5 wt %, based on the weight of the entire composition, and selected from the group consisting of mannitol, sorbitol, fructose, and pentaerythritol; and

at least one aromatic phosphate present in an amount in a range of between about 2 wt % and about 6 wt %, based on the weight of the entire

composition, and selected from the group consisting of triphenylphosphate, tricresylphosphate, resorcinol bis(diphenylphosphate), and bisphenol A bis(diphenylphosphate).

10015049 111201
T02FTT 6405T00T